DISCLAIMER: These Standard Operating Procedures (SOP's) are for the exclusive use of Navy Public Works Center (PWC) Norfolk. They are promulgated as guidance for their NAVFAC Commands. If intended to be used by other activities, they must be tailored to each activity's particular requirements and must be reviewed/approved by the activity's safety professionals prior to use.

NAVY PUBLIC WORKS CENTER
NORFOLK, VIRGINIA
UTILITIES DEPARTMENT

STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS

TITLE

INSULATING OIL SAMPLING

PROCEDURE NUMBER

WC 624 HVE 088

SIGNED:_____
(DATE)

APPROVED:_____
(DATE)

SAFETY PROFESSIONAL:_____
(DATE)

MANAGEMENT OFFICIAL:_____
(DATE)

REVISION A

DISTRIBUTION

CODE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE
601.C3							
620							
622							
610.E1							
622.3							

REVISIONS

REV	DESCRIPTION	SIGNATURE	DATE
A	Initial Issue.		

INSULATING OIL SAMPLING

Purpose:
Procedure to draw an oil sample from an oil insulated device.

Potential Energy Sources:
1. 34.5/11.5/4.16 kv equipment the oil is being drawn from.

Tools and PPE:
Tools: High voltage tester, jars, rags. PPE: Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, hard hat, safety shoes(oil resistant), work gloves, safety glasses, and back brace if required by back injury prevention and control program. The class of rubber gloves and sleeves will depend on the exposure voltage as per the following: Class 0 - up to 1,000 volts, Class 1 - up to 7,500 volts, Class 2 - up to 17,000 volts, Class 3 - up to 26,500 volts, Class 4 - up to 36,000 volts.

References:
1. PWC Occupational Safety and Health Program Manual, PWCNORVAINST 5100.33E
2. Occupational Safety and Health Standards for General Industry (29 CFR PART 1910): Subpart I, Personnel Protective Equipment
3. NFPA 70 E approach distances to exposed, energized, electrical conductors and circuit parts.
4. SOP WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)
5. SOP WC 622 HVE 007, Switchout And Switchback Energized
6. ASTM D923-91, Standard Test Method for Sampling Insulating Liquids

Procedures:
1. Operations personnel will deenergize device per SOPs
    a) WC 622 HVE 007, Switchout and Switchback Energized Circuit
    b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

2. Using a high voltage tester test the device to verify it is deenergized. Before the device is checked, test the high voltage tester on a known energized circuit to verify the tester is working. Test each deenergized conductor separately, taking care not to cross phase during test. If voltage is detected, stop the test and (a) notify operations personnel that the circuit is still energized, (b) wait for operations personnel to correct the problem, (c) perform the deenergization verification test once again after operations personnel finish switching operations and declare the device deenergized. If no voltage is indicated, retest the high voltage tester to re-verify it is working properly. Wear Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat while testing.

If the device's conductors can not be accessed, then go to a transformer site on the same circuit, which has accessible conductors, and perform the deenergization verification test there.

3. Record the device, the device's serial number, and the device's location on a label. Attach the label to the oil sampling jar.

4. Draw an oil sample.

a) Remove plug or cap from sample drain valve.

b) Open valve and drain approximately one quart into a waste container in order to flush any contaminates from the drain valve. Dispose of the waste oil per appropriate oil disposal methods.(See (b) below)

c) If the equipment was manufactured prior to 1972, or the waste oil has a chlorinated smell, it could be contaminated with PCBs. If the PCB parts per million(PPM) is not known then assume the oil To be PCB contaminated(50-499 PPM), and handle oil accordingly. Draw an oil sample into the sampling jar. Ensure spill prevention and counter measures are in place during the sampling. Clean up any oil spilled as if it were PCB contaminated. Turn over oil sample and all sampling equipment used to the PCB Coordinator for tracking and lab testing. Do no work on device till oil's PCB content is determined by laboratory methods.

d) If the oil's PPM is known to be less than 50, then draw an oil sample into a jar and perform the required work with the sample, dielectric test, etc.

e) Tighten drain valve and replace it's plug or cap.

f) Not all devices have drain valves or sampling valves.Oil fuse cut outs - remove oil plug and draw sample with a sampling pipette and place oil in jar. Pole transformers - Undo top and draw sample with a sampling pipette and place oil in a jar.

Other device - Inspect item to determine how to draw oil.

8. Operations personnel will energize the device per SOPs

a) WC 622 HVE 007, Switchout and Switchback Energized Circuit

b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

END